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PRELIMINARY REPORT INDUSTRY SERIES

1987 Census of Manufactures

MC87-I-32E(P)
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ABRASIVE, ASBESTOS, AND MISCELLANEOUS NONMETALLIC MINERAL PRODUCTS

Industries 3291, 3292, 3295, 3296, 3297, and 3299

INTRODUCTION

This report presents preliminary statistics from the 1987 Census of Manufactures for those establishments classified in the industries listed above. These data will be superseded by a more comprehensive final paperbound report. The method of data collection and use of administrative data are discussed in detail in the appendix.

All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The definitions of these industries are the same as those used in the 1987 Standard Industrial Classification (SIC) Manual.¹

INDUSTRY 3291, ABRASIVE PRODUCTS

In the 1987 Census of Manufactures, Industry 3291, Abrasive Products, had employment of 23.4 thousand. The employment figure was 10 percent below the 26.0 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was \$3.6 billion.

The cost of materials and services used by establishments in this industry amounted to \$1.7 billion in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3292, ASBESTOS PRODUCTS

In the 1987 Census of Manufactures, Industry 3292, Asbestos Products, had employment of 4.0 thousand. The employment figure was 59 percent below the 9.7 thousand

reported in 1982. Compared with 1986, employment in 1987 decreased 22 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was \$386.5 million.

The cost of materials and services used by establishments in this industry amounted to \$185.2 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3295, MINERALS, GROUND OR TREATED

In the 1987 Census of Manufactures, Industry 3295, Minerals, Ground or Treated, had employment of 8.4 thousand. The employment figure was 16 percent below the 10.0 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was \$1.3 billion.

The cost of materials and services used by establishments in this industry amounted to \$516.2 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3296, MINERAL WOOL

In the 1987 Census of Manufactures, Industry 3296, Mineral Wool, had employment of 21.5 thousand. The employment figure was 9 percent above the 19.7 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was \$3.3 billion.

The cost of materials and services used by establishments in this industry amounted to \$1.3 billion in 1987. Data on specific materials consumed appear in table 3.

¹Standard Industrial Classification Manual: 1987. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock No. 041-001-00314-2.

Address inquiries to Bureau of the Census, Industry Division, Washington, DC 20233, or call Delores Coleman (301) 763-7304.



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INDUSTRY 3297, NONCLAY REFRACTORIES

In the 1987 Census of Manufactures, Industry 3297, Nonclay Refractories, had employment of 7.7 thousand. The employment figure was 13 percent above the 6.8 thousand reported in 1982. Compared with 1986, employment in 1987 increased 20 percent. The 1986 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

The total value of shipments for establishments classified in this industry was \$952.9 million.

The cost of materials and services used by establishments in this industry amounted to \$442.8 million in 1987. Data on specific materials consumed appear in table 3.

INDUSTRY 3299, NONMETALLIC MINERALS PRODUCTS, N.E.C.

In the 1987 Census of Manufactures, Industry 3299, Nonmetallic Minerals Products, N.E.C., had employment of 7.4 thousand. The employment figure was 14 percent above the 6.5 thousand reported in 1982.

The total value of shipments for establishments classified in this industry was \$557.3 million.

The cost of materials and services used by establishments in this industry amounted to \$213.0 million in 1987. Data on specific materials consumed appear in table 3.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in the tables in this publication:

— Represents zero.

(D)	Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
(NA)	Not available.
(NC)	Not comparable.
(S)	Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
(X)	Not applicable.
(Z)	Less than half the unit shown.
do	Ditto.
n.e.c.	Not elsewhere classified.
n.s.k.	Not specified by kind.
pt.	Part.
r	Revised.
SIC	Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

CONTACTS FOR DATA USERS

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Census/ASM		
Durables	Kenneth Hansen	(301) 763-7304
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Current Industrial Reports		
Durables	Malcolm Bernhardt	(301) 763-2518
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Import/Export Publications	Foreign Trade Division	(301) 763-5140
Industry Analysis and Forecasts	International Trade Administration	(202) 377-4356

Table 1. Historical Statistics for the Industry: 1987 and Earlier Years

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix]

Year¹	Companies² (no.)	All establishments³		All employees		Production workers			Value added by manufac- ture⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expend- itures (million dollars)	End-of- year inventories⁴ (million dollars)	Ratios	
		Total (no.)	With 20 employ- ees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Spe- cial- ization (per- cent)	Cover- age (per- cent)
INDUSTRY 3291, ABRASIVE PRODUCTS															
1987 Census -----	(NA)	402	178	23.4	624.4	15.5	31.2	350.1	2 001.5	1 656.4	3 621.8	113.5	596.7	(NA)	(NA)
1986 ASM -----	(NA)	(NA)	(NA)	24.8	607.6	16.7	33.5	338.3	1 738.9	1 640.5	3 383.5	95.2	540.3	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	25.5	604.4	17.1	33.2	337.8	1 833.0	1 805.0	3 675.3	143.1	545.1	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	26.0	594.7	17.5	34.8	336.7	1 943.2	1 879.7	3 781.8	137.8	612.1	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	24.8	535.4	16.5	31.6	305.2	1 698.6	1 482.1	3 195.9	78.3	536.9	(NA)	(NA)
1982 Census -----	326	374	177	26.0	531.8	17.0	31.6	305.1	1 451.8	1 277.2	2 750.7	96.9	563.1	83	95
1981 ASM -----	(NA)	(NA)	(NA)	31.3	588.3	21.1	40.9	351.1	1 592.7	1 539.4	3 104.4	81.9	527.3	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	31.0	523.6	21.0	40.4	305.8	1 462.3	1 336.8	2 769.6	123.4	464.0	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	32.4	506.3	23.0	43.7	313.1	1 378.5	1 303.6	2 614.0	95.0	441.2	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	30.4	454.8	21.6	41.6	289.8	1 197.5	1 071.2	2 198.1	61.7	367.5	(NA)	(NA)
1977 Census -----	353	410	178	28.3	392.3	20.1	38.5	241.2	1 097.7	914.4	1 955.8	48.7	317.7	90	97
1976 ASM -----	(NA)	(NA)	(NA)	24.7	311.5	17.9	35.0	194.2	788.4	671.8	1 432.9	44.6	221.3	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	24.4	278.7	17.3	33.3	167.5	679.2	544.6	1 222.2	44.0	190.3	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	27.3	287.7	20.2	39.2	185.3	683.4	561.3	1 235.2	44.9	190.8	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	26.8	266.0	19.0	37.3	166.6	630.1	450.7	1 069.7	24.8	181.9	(NA)	(NA)
1972 Census -----	335	392	167	24.5	229.4	17.2	33.1	138.1	529.6	361.6	888.1	17.2	147.9	93	88
INDUSTRY 3292, ASBESTOS PRODUCTS															
1987 Census -----	(NA)	54	22	4.0	98.7	3.1	6.3	70.3	202.6	185.2	386.5	14.9	49.6	(NA)	(NA)
1986 ASM -----	(NA)	(NA)	(NA)	5.1	121.8	3.9	7.6	82.8	260.6	219.5	485.9	23.6	74.0	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	6.8	152.9	5.2	10.5	105.5	318.4	280.3	607.5	24.1	114.1	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	7.1	156.2	5.5	11.1	110.2	345.8	304.2	641.8	21.1	127.8	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	8.6	173.7	6.7	13.5	119.2	385.5	376.0	750.0	21.2	134.8	(NA)	(NA)
1982 Census -----	77	96	53	9.7	179.8	7.4	14.6	126.6	397.4	429.3	842.8	31.3	148.0	92	91
1981 ASM -----	(NA)	(NA)	(NA)	9.6	191.2	7.6	15.4	136.1	466.0	440.4	890.2	33.7	161.5	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	9.7	177.7	7.9	16.0	128.1	421.6	454.6	877.1	33.6	151.9	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	12.2	208.8	10.1	20.8	155.7	510.5	516.8	1 024.4	46.6	182.2	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	14.2	204.3	11.4	23.6	157.0	491.8	496.4	974.9	36.2	177.8	(NA)	(NA)
1977 Census -----	86	123	76	13.9	179.9	11.0	22.6	137.4	439.3	448.7	882.1	26.0	168.0	92	81
1976 ASM -----	(NA)	(NA)	(NA)	16.6	193.1	13.0	26.7	145.0	512.1	484.1	988.5	20.1	182.8	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	17.3	189.5	13.5	26.9	139.7	461.0	437.6	900.1	23.1	171.1	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	21.0	219.3	16.9	35.3	168.4	489.9	492.7	963.1	32.4	183.6	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	21.3	204.6	17.1	35.6	155.2	442.0	382.4	823.6	29.3	150.5	(NA)	(NA)
1972 Census -----	87	142	97	21.0	191.0	16.6	34.5	142.8	426.1	343.5	763.4	20.4	136.3	91	88
INDUSTRY 3295, MINERALS, GROUND OR TREATED															
1987 Census -----	(NA)	377	105	8.4	203.0	6.1	12.3	138.4	743.8	516.2	1 266.2	39.6	176.9	(NA)	(NA)
1986 ASM -----	(NA)	(NA)	(NA)	8.2	201.6	6.0	11.6	128.8	731.3	510.7	1 261.4	54.3	150.5	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	7.8	183.5	5.6	11.0	115.1	676.3	490.2	1 170.5	72.0	164.1	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	8.8	187.7	6.4	12.8	118.9	680.0	585.3	1 259.0	48.9	174.9	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	10.7	225.7	8.0	16.3	155.0	723.8	696.0	1 423.6	547.9	225.7	(NA)	(NA)
1982 Census -----	279	437	143	10.0	190.3	7.5	14.4	129.6	639.4	627.8	1 269.9	75.0	193.8	98	93
1981 ASM -----	(NA)	(NA)	(NA)	11.3	191.6	9.2	18.4	140.8	691.4	601.9	1 282.9	98.4	149.9	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	11.0	172.8	9.2	19.4	131.2	667.1	575.6	1 224.6	104.2	127.7	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	13.7	230.6	11.3	24.0	175.2	744.8	621.9	1 357.2	78.0	131.8	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	11.9	179.9	9.3	19.4	129.3	620.2	584.6	1 197.5	70.6	140.5	(NA)	(NA)
1977 Census -----	318	466	151	11.5	156.3	8.9	18.1	111.8	479.4	480.6	957.3	50.2	116.3	96	90
1976 ASM -----	(NA)	(NA)	(NA)	12.4	144.0	10.0	19.9	101.7	496.3	381.4	878.5	77.9	105.2	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	11.6	126.5	9.3	19.1	91.0	379.1	285.0	660.0	65.8	86.4	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	11.8	117.1	9.5	20.1	85.4	316.1	291.3	597.8	50.2	68.8	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	10.7	101.7	8.4	17.7	77.9	283.2	198.2	461.6	35.1	45.9	(NA)	(NA)
1972 Census -----	349	488	152	9.5	87.9	7.6	16.2	64.6	237.2	177.3	414.4	30.0	40.3	95	89
INDUSTRY 3296, MINERAL WOOL															
1987 Census -----	(NA)	231	110	21.5	619.8	17.4	36.6	483.9	1 985.3	1 269.4	3 260.6	177.6	242.6	(NA)	(NA)
1986 ASM -----	(NA)	(NA)	(NA)	21.9	624.2	17.7	36.8	481.6	2 021.5	1 300.9	3 314.7	160.9	244.0	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	21.3	583.1	17.0	35.8	447.2	1 823.0	1 277.9	3 100.6	161.7	229.9	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	21.4	542.8	17.3	36.5	419.3	1 733.6	1 241.1	2 964.4	131.1	217.8	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	19.5	476.2	15.6	32.9	364.6	1 440.7	1 082.0	2 517.6	56.4	194.4	(NA)	(NA)
1982 Census -----	130	179	94	19.7	438.9	15.5	31.9	334.2	1 236.7	1 041.5	2 281.1	67.0	180.1	97	97
1981 ASM -----	(NA)	(NA)	(NA)	21.8	448.9	17.0	35.2	344.4	1 245.1	1 106.7	2 338.6	91.4	201.3	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	22.0	418.4	17.7	37.2	323.0	1 215.5	1 031.8	2 235.4	109.2	186.0	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	24.1	412.2	19.6	40.8	323.9	1 221.4	962.3	2 180.1	116.3	172.0	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	24.1	371.2	19.7	41.1	289.0	1 161.6	874.6	2 019.1	209.4	149.3	(NA)	(NA)
1977 Census -----	95	153	90	22.6	313.8	18.6	38.3	244.5	1 053.7	738.6	1 790.5	85.9	121.5	93	96
1976 ASM -----	(NA)	(NA)	(NA)	20.3	263.2	16.6	34.5	206.2	767.5	628.4	1 389.7	35.0	115.3	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	18.1	210.2	14.5	29.5	160.4	617.0	528.0	1 145.5	81.0	100.4	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	19.5	218.7	16.0	33.7	171.4	596.8	468.1	1 059.8	102.6	86.2	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	18.7	194.0	15.5	32.5	152.5	521.5	351.1	868.9	58.5	67.6	(NA)	(NA)
1972 Census -----	66	108	75	18.0	172.3	14.7	30.8	135.7	441.5	315.6	755.4	50.1	54.9	93	93
INDUSTRY 3297, NONCLAY REFRACTORIES															
1987 Census -----	(NA)	134	79	7.7	201.3	5.6	11.2	130.1	510.1	442.8	952.9	16.3	189.5	(NA)	(NA)
1986 ASM -----	(NA)	(NA)	(NA)	6.4	162.7	4.6	9.1	102.7	399.2	372.1	768.5	513.7	160.7	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	6.3	152.0	4.5	8.8	99.2	377.1	369.2	755.3	532.5	157.1	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	6.5	147.5	4.8	9.1	95.5	361.3	347.1	701.4	24.7	177.1	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	5.6	129.5	4.1	7.7	84.8	288.3	312.8	588.9	520.8	195.9	(NA)	(NA)
1982 Census -----	77	119	66	6.8	148.4	4.6	8.7	93.0	333.1	343.3	691.0	48.5	222.9	86	82
1981 ASM -----	(NA)	(NA)	(NA)	9.6	196.5	6.8	13.0	130.3	556.3	484.7	1 020.9	69.7	234.4	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	9.7	177.4	7.0	13.6	120.0	488.9	482.3	9757				

See footnotes at end of table.

Table 1. Historical Statistics for the Industry: 1987 and Earlier Years—Con.

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix]

Year ¹	All establishments ³			All employees		Production workers			Value added by manufac- ture ⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expen- ditures (million dollars)	End-of- year inven- tories ⁴ (million dollars)	Ratios	
	Compa- nies ² (no.)	Total (no.)	With 20 employ- ees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Speci- alization (per- cent)	Cover- age (per- cent)
INDUSTRY 3297, NONCLAY REFRACTORIES—Con.															
1977 Census ----	74	109	66	9.1	134.3	6.8	13.5	92.5	352.1	336.4	680.2	37.1	159.5	92	83
1976 ASM -----	(NA)	(NA)	(NA)	9.0	122.8	6.7	13.3	85.3	329.4	316.7	643.0	25.6	152.2	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	8.9	111.8	6.5	13.1	77.4	287.3	275.8	564.9	29.2	137.2	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	10.9	122.7	8.5	17.5	90.1	335.9	286.9	609.2	24.8	132.6	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	9.2	96.3	7.1	14.8	69.3	249.1	203.7	445.0	16.5	92.0	(NA)	(NA)
1972 Census ----	60	90	60	8.1	78.3	6.0	12.8	54.5	191.1	151.1	342.1	9.3	81.6	94	84
INDUSTRY 3299, NONMETALLIC MINERAL PRODUCTS, N.E.C.															
1987 Census ----	(NA)	516	88	7.4	130.6	5.5	10.4	82.2	347.4	213.0	557.3	11.0	74.5	(NA)	(NA)
1986 ASM -----	(NA)	(NA)	(NA)	8.0	152.9	6.1	12.4	106.8	420.1	209.7	626.2	24.0	94.6	(NA)	(NA)
1985 ASM -----	(NA)	(NA)	(NA)	9.1	153.6	7.1	14.0	108.8	395.2	218.2	606.9	33.0	97.6	(NA)	(NA)
1984 ASM -----	(NA)	(NA)	(NA)	8.0	124.0	6.1	12.3	85.3	373.5	217.5	582.3	28.2	77.2	(NA)	(NA)
1983 ASM -----	(NA)	(NA)	(NA)	4.4	84.8	3.7	7.8	63.9	232.9	166.0	392.3	⁵ 23.5	62.8	(NA)	(NA)
1982 Census ----	569	583	67	6.5	94.5	4.8	10.0	63.9	240.3	177.7	422.3	38.3	60.6	95	87
1981 ASM -----	(NA)	(NA)	(NA)	9.6	124.3	7.2	15.4	83.4	304.2	197.6	500.7	25.3	40.4	(NA)	(NA)
1980 ASM -----	(NA)	(NA)	(NA)	9.7	122.6	7.2	15.1	78.4	331.8	219.8	536.1	127.3	61.7	(NA)	(NA)
1979 ASM -----	(NA)	(NA)	(NA)	9.9	121.3	7.8	15.3	88.5	320.8	191.8	508.0	31.4	43.8	(NA)	(NA)
1978 ASM -----	(NA)	(NA)	(NA)	8.0	95.5	6.4	12.7	63.0	266.4	169.4	434.8	36.8	45.0	(NA)	(NA)
1977 Census ----	681	696	70	7.7	87.2	6.2	11.4	59.1	224.1	166.6	387.3	28.7	46.9	93	89
1976 ASM -----	(NA)	(NA)	(NA)	7.8	79.8	6.3	11.7	56.4	196.6	128.0	325.3	31.0	36.4	(NA)	(NA)
1975 ASM -----	(NA)	(NA)	(NA)	6.9	64.4	5.5	10.8	43.2	135.6	112.2	253.9	18.4	29.9	(NA)	(NA)
1974 ASM -----	(NA)	(NA)	(NA)	7.8	61.4	6.3	12.2	44.3	144.3	92.9	230.9	11.0	31.0	(NA)	(NA)
1973 ASM -----	(NA)	(NA)	(NA)	7.1	53.6	6.0	11.1	37.5	133.5	73.1	200.2	9.0	18.0	(NA)	(NA)
1972 Census ----	480	491	81	6.3	46.0	5.2	9.9	31.9	104.7	58.7	168.5	5.0	16.1	94	90

Note: Establishments of single unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. Data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were estimated based on administrative-record information from other agencies in conjunction with industry averages. These establishments accounted for the following percent of total value of shipments: SIC 3291, 9%; SIC 3292, 9%; SIC 3295, 10%; SIC 3296, 4%; SIC 3297, 12%; and SIC 3299, 29%.

¹In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1972, see 1972 Census of Manufactures, vol. II, table 1a of the industry chapter.

²For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

³Includes establishments with payroll at any time during year.

⁴Beginning with the 1982 Census of Manufactures, all respondents were requested to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior Censuses and annual surveys of manufactures in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, inventories and value added by manufacture are not comparable to prior-year data.

⁵Estimates for new capital expenditures have associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3291--	ABRASIVE PRODUCTS						
	Total -----	(NA)	(X)	2 865.6	(NA)	(X)	2 135.7
32915 --	Nonmetallic sized grains, powders, and flour abrasives (including graded products only) -----	(NA)	(X)	413.2	(NA)	(X)	409.7
32915 17	Artificial (synthetic): Silicon carbide ----- 1,000 s tons--	(NA)	(S)	65.2	13	**103.6	85.6
32915 19	Aluminum oxide ----- do--	(NA)	(S)	100.2	15	*166.9	104.0
32915 29	Other artificial sized grains, powders, and flour (including combinations of silicon carbide and aluminum oxide, boron carbide, tungsten carbide, synthetic diamond, etc.) -----	(NA)	(X)	187.7	22	(X)	208.9
32915 48	Natural sized grains, powders, and flour -----	(NA)	(X)	50.1	6	(X)	11.1
32915 00	Nonmetallic sized grains, powders, and flour abrasives, n.s.k. -----	(NA)	(X)	9.9	(NA)	(X)	-

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3291—	ABRASIVE PRODUCTS—Con.						
32916 —	Nonmetallic abrasive products (including diamond abrasives) ----- Artificial and natural bonded abrasives (including grinding wheels, sticks, stones, hones, balls, and bricks; excluding refractory bricks, floor and stair brick, and similar byproducts):	(NA)	(X)	651.3	(NA)	(X)	610.8
32916 31	Vitrified bond -----	(NA)	(X)	182.8	28	(X)	181.3
32916 37	Resinoid and shellac bond-reinforced -----	(NA)	(X)	115.7	36	(X)	95.4
32916 42	Resinoid and shellac bond-nonreinforced -----	(NA)	(X)	106.6	31	(X)	130.1
32916 44	Rubber bond -----	(NA)	(X)	16.6	11	(X)	19.5
32916 65	Other bonded abrasives -----	(NA)	(X)	10.6	8	(X)	5.0
32916 72	Diamond wheels: ----- Metal bond ----- 1,000 carats -----	(NA)	(S)	74.1	25	(S)	57.8
32916 74	Other bond -----	(NA)	(S)	42.9	31	(S)	54.6
32916 76	Cubic boron nitride wheels, all bonds -----	(NA)	(S)	13.5	10	*764.0	7.7
32916 98	Other artificial and natural nonmetallic abrasive products (except coated abrasives; including grinding, lapping, buffing compounds, crude lump forms, etc.) -----	(NA)	(X)	23.9	25	(X)	59.1
32916 00	Nonmetallic abrasive products, n.s.k. -----	(NA)	(X)	64.6	(NA)	(X)	.3
32917 —	Nonmetallic coated abrasive products and buffing wheels, polishing wheels, and laps ----- Coated or impregnated with any natural or artificial abrasive material:	(NA)	(X)	1 286.2	(NA)	(X)	843.1
32917 12	Cloth-glue bond: ----- Belts ----- 1,000 reams -----	(NA)	(S)	9.1	7	(S)	16.5
32917 14	Other shapes -----	(NA)	(S)	74.5	13	(S)	62.9
32917 16	Cloth-resin and waterproof bond: ----- Belts ----- 1,000 reams -----	(NA)	(S)	236.2	11	(S)	182.2
32917 18	Other shapes -----	(NA)	(D)	(D)	15	(S)	81.9
32917 23	Paper-glue bond -----	(NA)	(D)	(D)	(NA)	(S)	184.5
32917 40	Other (including paper-cloth combination, vulcanized fiber-cloth combination, vulcanized fibers, paper-resin, and waterproof bond, etc.) -----	(NA)	(S)	255.1	(NA)	(D)	271.0
32917 71	Buffing and polishing wheels and laps made of cloth, leather, felt, and other materials (containing no abrasive grains, powders, or flour) -----	(NA)	(X)	45.1	15	(X)	43.0
32917 00	Nonmetallic coated abrasive products and buffing wheels, polishing wheels, and laps, n.s.k. -----	(NA)	(X)	30.7	(NA)	(X)	1.2
32918 —	Metal abrasives (including scouring pads) -----	(NA)	(X)	204.2	(NA)	(X)	173.9
32918 11	Steel and iron grit, shot, and sand ----- 1,000 s tons -----	(NA)	(NA)	*237.7	8	*138.3	55.2
32918 31	Steel wool -----	(NA)	(NA)	16.9	3	(S)	17.6
32918 90	Other metal abrasives and scouring pads (including metal pads with soaps) -----	(NA)	(X)	93.4	14	(X)	100.5
32918 00	Metal abrasives, n.s.k. -----	(NA)	(X)	-	(NA)	(X)	.5
32919 —	Abrasive products, n.s.k. -----	(NA)	(X)	310.7	(NA)	(X)	98.3
32919 00	Abrasive products, n.s.k., typically for establishments with 20 employees or more (see note) -----	(NA)	(X)	103.8	(NA)	(X)	25.2
32919 02	Abrasive products, n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	206.9	(NA)	(X)	73.1
3292—	ASBESTOS PRODUCTS						
	Total -----	(NA)	(X)	389.7	(NA)	(X)	841.0
32922 —	Asbestos friction materials -----	(NA)	(X)	275.0	(NA)	(X)	276.5
	Brake linings: -----						
32922 11	Woven, containing asbestos yarn, tape, or cloth ----- 1,000 lin ft.	(NA)	(D)	(D)	7	*23 728.4	53.2
32922 15	Molded (including all nonwoven types) ----- 1,000 cu ft.	(NA)	(S)	80.1	14	(S)	88.7
32922 21	Disc brake pads ----- mil pieces	(NA)	(S)	87.7	9	(S)	61.4
32922 51	Clutch facing: -----						
32922 55	Woven, containing asbestos yarn, tape, or cloth ----- mil pieces	(NA)	(D)	(D)	3	(S)	(S)
32922 55	Molded (including all nonwoven types) ----- do.	(NA)	(D)	(D)	4	*23.3	*72.6
32922 00	Asbestos friction materials, n.s.k. -----	(NA)	(X)	6.4	(NA)	(X)	.5
32927 —	Other asbestos products -----	(NA)	(X)	74.1	(NA)	(X)	544.2
32927 14	Vinyl asbestos floor tile ----- mil sq yd.	(NA)	-	-	(NA)	(D)	(D)
	Asbestos textiles: -----						
32927 15	Yarn, cord, thread, and cloth ----- mil lb.	(NA)	(S)	4.7	(NA)	(S)	22.5
32927 31	Other asbestos textiles (including roving, lap, wick, rope, tape, carded fibers, etc.) ----- do.	(NA)	(D)	(D)	6	(S)	16.6
32927 33	Asbestos felts: -----						
32927 34	Roofing, asphalt or tar saturated ----- 1,000 s tons -----	(NA)	(D)	(D)	5	*34.5	23.1
32927 36	Other ----- do.	(NA)	(D)	(D)	5	**13.9	10.5
	Insulation materials containing asbestos (including pipe and block insulation) -----	(NA)	(X)	(D)	5	(X)	4.1
32927 41	Asbestos-cement products: -----						
32927 77	Flat sheets and wallboard, all thicknesses converted to 1/4 in. basis ----- 1,000 sq ft.	(NA)	-	-	5	*247.9	22.6
32927 78	Shingles and clapboard (including accessories) ----- mil squares	(NA)	(D)	(D)	3	(S)	22.0
32927 98	Other, including corrugated sheets, pipe, conduits, ducts, etc. -----	(NA)	(X)	38.3	(NA)	(NA)	117.6
32927 00	Other asbestos products (including asphalt floor tile, millboard, prefabricated housing components, etc.) -----	(NA)	(X)	(D)	(NA)	(D)	(D)
32927 00	Other asbestos products, n.s.k. -----	(NA)	(X)	-	(NA)	(X)	-

See footnotes at end of table.

Table 2. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text.]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3292- --	ASBESTOS PRODUCTS—Con.						
32920 --	Asbestos products, n.s.k.	(NA)	(X)	40.5	(NA)	(X)	20.3
32920 00	Asbestos products, n.s.k., typically for establishments with 20 employees or more (see note)	(NA)	(X)	14.2	(NA)	(X)	7.1
32920 02	Asbestos products, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	26.3	(NA)	(X)	13.2
3295- --	MINERALS AND EARTHS, GROUND OR OTHERWISE TREATED						
	Total	(NA)	(X)	1 198.9	(NA)	(X)	1 252.9
32950 --	Minerals and earths, ground or otherwise treated:						
32950 11	Lightweight aggregate (such as diatomaceous earth, expanded clay, expanded slag, cinders, perlite, haydite, pumice, but excluding vermiculite) 1,000 s tons.....	(NA)	**1 008.3	106.6	59	**2 397.9	198.5
	Extoliated vermiculite:						
32950 13	Aggregate mil cu ft.....	(NA)	(D)	(D)	15	*62.0	78.6
32950 15	Other (such as loose fill insulation, acoustical, etc.)	(NA)	**22.2	20.0	6	*18.2	16.8
32950 20	Refractory magnesite, including dead-burned magnesite or magnesite (for additional detail, see Current Industrial Report MQ-32C, Refractories)	(NA)	(X)	98.6	10	(X)	129.5
32950 31	Crushed slag 1,000 s tons.....	(NA)	(S)	105.8	21	**16 142.0	64.6
32950 61	Crushed and ground uncalcined gypsum, including gypsite and anhydrite do..	(NA)	296.5	7.4	12	*1 181.4	20.0
32950 81	Natural graphite, ground, refined, or blended do..	(NA)	(S)	35.3	8	230.8	128.9
32950 84	Ground crude fire clay, high alumina clay, and silica fire clay do..	(NA)	(S)	39.0	14	(S)	28.1
32950 85	Clays artificially activated with acid or other materials do..	(NA)	*750.8	139.2	9	(S)	36.5
32950 86	Mica, ground or treated do..	(NA)	**73.1	14.1	6	**38.5	8.0
32950 94	Talc, steatite, soapstone, and pyrophyllite, ground or otherwise treated do..	(NA)	(D)	(D)	4	(S)	26.6
32950 98	Other minerals and earths, ground or otherwise treated, including feldspar, roofing granules, and ground barite do..	(NA)	(S)	366.7	71	(X)	453.8
32950 00	Minerals, ground or treated, n.s.k., typically for establishments with 20 employees or more (see note)	(NA)	(X)	125.8	(NA)	(X)	41.8
32950 02	Minerals, ground or treated, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	17.9	(NA)	(X)	21.2
3296- --	MINERAL WOOL						
	Total	(NA)	(X)	3 147.2	(NA)	(X)	2 215.2
32961 --	Mineral wool for thermal and acoustical envelope insulation (for insulating homes, and commercial and industrial buildings)	(NA)	(X)	2 180.0	(NA)	(X)	1 556.0
32961 11	Loose fiber (blowing and pouring) (shipped as such) and granulated fiber 1,000 s tons.....	(NA)	**235.2	95.5	(NA)	(*)	(*)
	Building batts, blankets, and rolls (in thermal resistance (R) values):						
32961 31	R-19.0 or more 1,000 s tons.....	(NA)	(S)	641.4	(NA)	588.1	432.2
32961 35	R-11.0 to R-18.9 do..	(NA)	(S)	421.4	(NA)	468.5	360.6
32961 38	R-10.9 or less do..	(NA)	**54.2	56.4	(NA)	(S)	51.7
32961 51	Board (such as roof insulation) do..	(NA)	(S)	117.1	(NA)	(*)	(*)
32961 61	Acoustical, such as wall and ceiling (sold as acoustical insulation) do..	(NA)	(S)	600.9	(NA)	(S)	331.2
32961 98	Other mineral wool for thermal insulation do..	(NA)	(S)	133.5	(NA)	(S)	*389.2
32961 00	Mineral wool for thermal and acoustical envelope insulation (for insulating homes, and commercial and industrial buildings), n.s.k.	(NA)	(X)	114.0	(NA)	(X)	1.1
32962 --	Mineral wool for industrial, equipment, and appliance insulation	(NA)	(X)	786.8	(NA)	(X)	625.7
	Blankets (flexible) (including fabricated pieces, rolls, and batts):						
32962 31	Plain 1,000 s tons.....	(NA)	(S)	96.0	(NA)	(S)	156.7
32962 34	Coated do..	(NA)	(S)	38.6	(NA)	(S)	67.2
32962 36	Faced and metal meshed do..	(NA)	(S)	8.2	(NA)	(S)	
32962 45	Special purpose insulation pieces, such as special purpose automotive, appliance, and aerospace items and original equipment parts do..	(NA)	(S)	282.8	(NA)	(S)	46.7
32962 51	Other blocks and boards do..	(NA)	(D)	(D)	(NA)	(S)	10.8
32962 61	Pipe insulation do..	(NA)	32.3	117.4	(NA)	(S)	135.0
32962 83	Acoustical (including pads, boards, patches, etc.) do..	(NA)	(D)	(D)			
32962 98	Other mineral wool for insulation (including air duct, loose fiber) (shipped as such), granulated fiber, insulating, and finishing cements, high-temperature insulation fibers, etc. do..	(NA)	(S)	152.7	(NA)	(S)	208.8
32962 00	Mineral wool for industrial, equipment, and appliance insulation, n.s.k.	(NA)	(X)	40.1	(NA)	(X)	.4
32960 --	Mineral wool, n.s.k.	(NA)	(X)	180.4	(NA)	(X)	33.4
32960 00	Mineral wool, n.s.k., typically for establishments with 20 employees or more (see note)	(NA)	(X)	141.2	(NA)	(X)	11.2
32960 02	Mineral wool, n.s.k., typically for establishments with less than 20 employees (see note)	(NA)	(X)	39.3	(NA)	(X)	22.2

See footnotes at end of table.

Table 2. **Product and Product Classes—Quantity and Value of Shipments by All Producers: 1987 and 1982—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 product code	Product	1987			1982		
		Number of companies with shipments of \$100,000 or more	Product shipments ¹		Number of companies with shipments of \$100,000 or more	Product shipments ¹	
			Quantity ²	Value (million dollars)		Quantity ²	Value (million dollars)
3297- —	NONCLAY REFRACTORIES						
	Total -----	(NA)	(X)	971.0	(NA)	(X)	715.8
32970 — 32970 00	Nonclay refractories, except dead-burned magnesia: Nonclay refractories, except dead-burned magnesia (for additional detail, see Current Industrial Report MQ-32C, Refractories) -----	(NA)	(X)	938.5	(NA)	(X)	700.5
32970 02	Nonclay refractories, n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	32.4	(NA)	(X)	15.2
3299- —	NONMETALLIC MINERAL PRODUCTS, N.E.C.						
	Total -----	(NA)	(X)	576.2	(NA)	(X)	453.8
32990 —	Other nonmetallic mineral products, n.e.c.: Mica products:						
32990 53	Built-up sheet mica products -----	(NA)	(X)	13.5	7	(X)	13.7
32990 55	Other sheet mica products -----	(NA)	(X)	9.4	7	(X)	4.5
32990 56	Mica products, other than sheet -----	(NA)	(X)	10.5	8	(X)	16.6
32990 81	Statuary and art goods (factory production) -----	(NA)	(X)	76.2	52	(X)	40.6
32990 94	Other nonmetallic mineral products (including magnesite floor composition, stucco, artificial graphite, synthetic stones, sand-lime brick, block and tile, calcium silicate, and perlite pipe covering, etc.) -----	(NA)	(X)	286.6	62	(X)	304.7
32990 00	Other nonmetallic mineral products, n.e.c., n.s.k., typically for establishments with 20 employees or more (see note) -----	(NA)	(X)	94.2	(NA)	(X)	41.8
32990 02	Other nonmetallic mineral products, n.e.c., n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	85.7	(NA)	(X)	31.9

Note: In 1987 Census of Manufactures, data for establishments of small single unit companies with up to 20 employees were estimated from administrative-record data rather than data actually collected from respondents. Employment cutoffs used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1987 and 1982 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

¹Data reported by all producers, not just those with shipments of \$100,000 or more.
²For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).
³For 1982, data for product codes 32922 51 and 32922 55 are combined to avoid disclosing data for individual companies.
⁴For 1982, product codes 32961 11 and 32961 51 were combined with product code 32961 98 to avoid disclosing data for individual companies.

Table 3. **Materials Consumed by Kind: 1987 and 1982**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
	INDUSTRY 3291, ABRASIVE PRODUCTS				
	Materials, parts, containers, and supplies -----	(X)	1 384.2	(X)	1 033.9
149941	Natural abrasive materials -----	(X)	29.8	(X)	37.1
281950	Aluminum oxide ----- 1,000 s tons..	**208.7	103.7	(S)	108.1
281992	Silicon carbide ----- do..	**94.6	51.3	(S)	83.1
281962	Alumina zirconia ----- do..	(S)	23.4	(S)	17.0
190039	Diamond ----- carats..	(S)	26.9	(S)	14.8
281998	Cubic boron nitride ----- do..	(S)	7.3	*685.9	1.5
280009	Other industrial chemicals -----	(X)	105.1	(X)	26.4
289101	Glues and adhesives ----- mil lb..	(S)	39.3	(S)	72.7
220101	Cotton and manmade fiber fabrics, broadwoven and narrow woven -----	(X)	105.0	(X)	87.0
260001	Paper and paperboard products -----	(X)	113.6	(X)	80.7
970099	All other materials and components, parts, containers, and supplies -----	(X)	640.8	(X)	402.8
971000	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	138.0	(X)	102.7

See footnotes at end of table.

Table 3. Materials Consumed by Kind: 1987 and 1982—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1987 material code	Material	1987		1982	
		Quantity ¹	Delivered cost (million dollars)	Quantity ¹	Delivered cost (million dollars)
	INDUSTRY 3292, ASBESTOS PRODUCTS				
	Materials, parts, containers, and supplies -----	(X)	157.4	(X)	381.3
149971	Asbestos, crude, including fiber ----- 1,000 s tons--	(S)	16.6	*246.1	64.9
324101	Portland cement ----- do--	(S)	3.3	**152.4	10.1
249941	Cork products -----	(X)	-	(X)	(D)
262190	Building paper and board -----	(X)	(D)	(X)	-
280023	Pigment, organic and inorganic ----- mil lb--	(D)	(D)	11.5	7.2
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes ----- do--	(D)	(D)	194.3	61.2
282202	Synthetic rubber ----- do--	(D)	(D)	29.4	2.1
083111	Natural rubber ----- mil s tons--	(D)	(D)	(D)	(D)
306902	Fabricated rubber products, except tires, tubes, hose, belting, and gaskets -----	(X)	(D)	(X)	-
331018	Tin plate, terne plate, and black plate ----- 1,000 s tons--	-	-	-	-
335002	Nonferrous metal mill shapes and forms ----- do--	-	-	(D)	(D)
349012	Fabricated wire products, including springs and spring wire ----- do--	(D)	(D)	-	-
970099	All other materials and components, parts, containers, and supplies -----	(X)	114.1	(X)	183.8
971000	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	13.2	(X)	47.4
	INDUSTRY 3295, MINERALS, GROUND OR TREATED				
	(Material data were not collected for this industry.)				
	INDUSTRY 3296, MINERAL WOOL				
	Materials, parts, containers, and supplies -----	(X)	951.5	(X)	733.5
145501	Clay -----	-	8.4	(X)	3.4
147001	Barite, borate, potash, fluorspar, and rock salt -----	(X)	(D)	(X)	33.1
220101	Cotton and manmade fiber fabrics, broadwoven and narrow woven ----- 1,000 s tons--	(X)	20.0	(X)	5.5
267420	Paper shipping sacks -----	(D)	(D)	(S)	10.4
265001	Paperboard containers and boxes, including folding corrugated, fiber, and set-up ----- do--	(S)	17.3	(S)	15.8
260001	All other paper and paperboard products -----	(X)	35.8	(X)	49.9
281000	Industrial inorganic chemicals -----	(X)	55.8	(X)	66.2
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and shapes ----- mil lb--	(S)	33.3	217.8	45.6
308007	Plastics products consumed in the form of sheets, rods, tubes, and other shapes -----	(X)	48.2	(X)	15.2
289101	Glues and adhesives ----- mil lb--	(S)	34.3	(S)	22.0
322931	Glass fiber (textile type, bonded mat type, etc.) ----- 1,000 lb--	(S)	69.0	(S)	47.9
329103	Abrasives and miscellaneous nonmetallic minerals products -----	(X)	(D)	(X)	13.6
331212	Crude blast furnace slag ----- 1,000 s tons--	(S)	34.0	2 123.3	18.4
335301	Aluminum sheet, plate, and foil ----- do--	*10.0	12.2	4.0	7.9
349702	Converted aluminum foil ----- mil lb--	(S)	22.2	(S)	20.4
970099	All other materials and components, parts, containers, and supplies -----	(X)	311.9	(X)	307.0
971000	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	95.3	(X)	51.1
	INDUSTRY 3297, NONCLAY REFRACTORIES				
	Materials, parts, containers, and supplies -----	(X)	366.9	(X)	277.8
145001	Clay, ceramic, and refractory minerals ----- 1,000 s tons--	(S)	105.8	291.7	52.2
329502	Dead-burned magnesia or magnesite ----- do--	163.1	38.4	200.1	65.4
320591	Refractories, clay or nonclay ----- do--	(S)	41.4	(S)	47.8
280001	Industrial chemicals ----- do--	(X)	10.1	(X)	6.6
970099	All other materials and components, parts, containers, and supplies -----	(X)	117.5	(X)	*74.2
971000	Materials, parts, containers, and supplies, n.s.k. ² -----	(X)	53.7	(X)	31.6
	INDUSTRY 3299, NONMETALLIC MINERAL PRODUCTS, N.E.C.				
	(Material data were not collected for this industry.)				

¹For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

²Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

APPENDIX

Scope and Coverage and Explanation of Terms

GENERAL

The 1987 Census of Manufactures is the 32nd census of manufacturing establishments conducted in the United States. For 1987, it was conducted as part of the economic censuses, which included the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses, under authority of title 13 of the United States Code. Title 13 specifies that an economic census be conducted every 5 years to cover years ending in 2 and 7.

SCOPE AND COVERAGE

Establishment Basis of Reporting

The census of manufactures is conducted on an establishment basis. All manufacturing establishments with one paid employee or more at any time during the year are covered by the census of manufactures. Therefore, a company operating at more than one location is required to file a separate report for each location. This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units which service manufacturing establishments of the same company. Where these auxiliary operations are conducted at the same location as the manufacturing operation, they are usually included in the report for the operating manufacturing establishment.

Use of Administrative Records

From a universe of approximately 350,000 manufacturing establishments in the 1987 Census of Manufactures, approximately 150,000 small single-establishment companies were excused from filing reports. Selection of the small establishment nonmail cases was done on an industry-by-industry basis. A variable cutoff was used to determine those establishments for which administrative records were to be used in place of a census report. The cutoffs were selected so the administrative-record cases would account for approximately 3 percent or less of the value of shipments for the industry. These cutoffs were then adjusted so that all single-establishment companies with less than 5 employees were excluded from the mail canvass, while all establishments with more than 20 employees were included. Where establishments in the 5 to 20 employee size range were included in the mail canvass, an abbreviated census form was frequently used.

For these nonmail establishments, (and a small number of larger establishment whose reports were not received at the time the data were tabulated) data on employment, payroll, and receipts were obtained from administrative records of other government agencies rather than from census forms. The administrative-record information was then used in conjunction with industry averages to estimate the data for these establishments. The value of shipments and cost of materials were not distributed among specific products and materials but were included in the product and material "not specified by kind" (n.s.k.) categories.

EXPLANATION OF TERMS

Number of establishments and companies—A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

All employees—Includes all full-time and part-time employees on the payrolls at any time during the year. Included are all persons on paid sick leave, paid holidays, and paid vacations. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average of those for midmonth payroll periods of March, May, August, and November.

Production workers—Includes workers up through the working-supervisor level engaged in fabricating, processing, assembling, inspecting, receiving, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial, guard services, product development, auxiliary production for plant's own use (e.g., power-plant), recordkeeping, and other closely associated services. Truckdrivers delivering ready-mixed concrete are also included in production workers.

Other employees—Includes nonproduction personnel, including those engaged in the following activities: supervision above working-supervisor level, sales (including driver/salespersons), sales delivery (truckdrivers and helpers), advertising, credit collection, installation and

servicing of own product, clerical and routine office functions, executive, purchasing, finance, legal, personnel (including cafeteria, etc.), professional, and technical employees.

Payroll—Includes the gross earnings for the “employees” defined above, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees’ Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. Respondents were told that in reporting they could follow the definition of payrolls used for calculating the Federal withholding tax.

Production-worker hours—Covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave when the employee was not at the plant.

Cost of materials—Refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuels consumed, regardless of whether they were purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (a) all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year; (b) electric energy purchased; (c) fuels consumed for heat, power, or generating electricity; (d) work done by others on materials or parts furnished by manufacturing establishments (contract work); and (e) products bought and resold in the same condition.

Specific materials consumed (table 3)—In addition to the total cost of materials which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. These inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. Establishments consuming less than a specified amount (usually \$10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which administrative records were used was estimated as “not specified by kind” (n.s.k.).

Value of shipments and other receipts—Generally refers to received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all

miscellaneous receipts such as receipts for contract work performed for others, installation and repair receipts, sale of scrap, and sale of products bought and resold without further processing. Included are all items made by or for the establishment from materials owned by it whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In a few industries, the value of production or value of work completed is used instead of value of shipments. These industries are identified in the introduction and are footnoted in table 1.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, that is, including not only the direct costs of production but also a reasonable proportion of “all other costs” (including company overhead and profit).

Shipments or production of individual products (table 2)—In the 1987 census, detailed shipment information was collected for approximately 11,000 individual products. These products are identified by a seven-digit code and are grouped into approximately 1,500 classes of products, which in turn are primary to 459 four-digit industries. Data at the five-digit product-class level have been collected each year as part of the annual survey of manufactures. Information at the seven-digit level, collected for many industries in the current industrial reports program, is not included in this table.

Value added by manufacture—This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments for products manufactured plus receipts for services rendered. The result of this calculation is then adjusted by the addition of value added by merchandising operations (that is, the difference between the sales value and cost of merchandise sold without further manufacturing, processing, or assembly) plus the net change in finished goods and work-in-process inventories between the beginning and end of the year.

For those industries where value of production is collected instead of value of shipments (see footnote in table 1), value added is adjusted only for the change in work-in-process inventories between the beginning and end of the year. For those industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

Value added avoids the duplication in the figure for value of shipments which results from the use of products of some establishments as materials by others. Value

added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

Expenditures for new plant and equipment—Establishments in operation and any known plants under construction were asked to report their expenditures for (a) permanent additions and major alterations to manufacturing establishments and (b) new machinery and equipment used for replacement and additions to plant capacity if they are of the type for which depreciation accounts are ordinarily maintained.

These totals exclude expenditures for used plant and equipment, expenditures for land, and cost of maintenance and repairs charged as current operating expenses. Data for used plant and equipment will be published in the final industry bulletin.

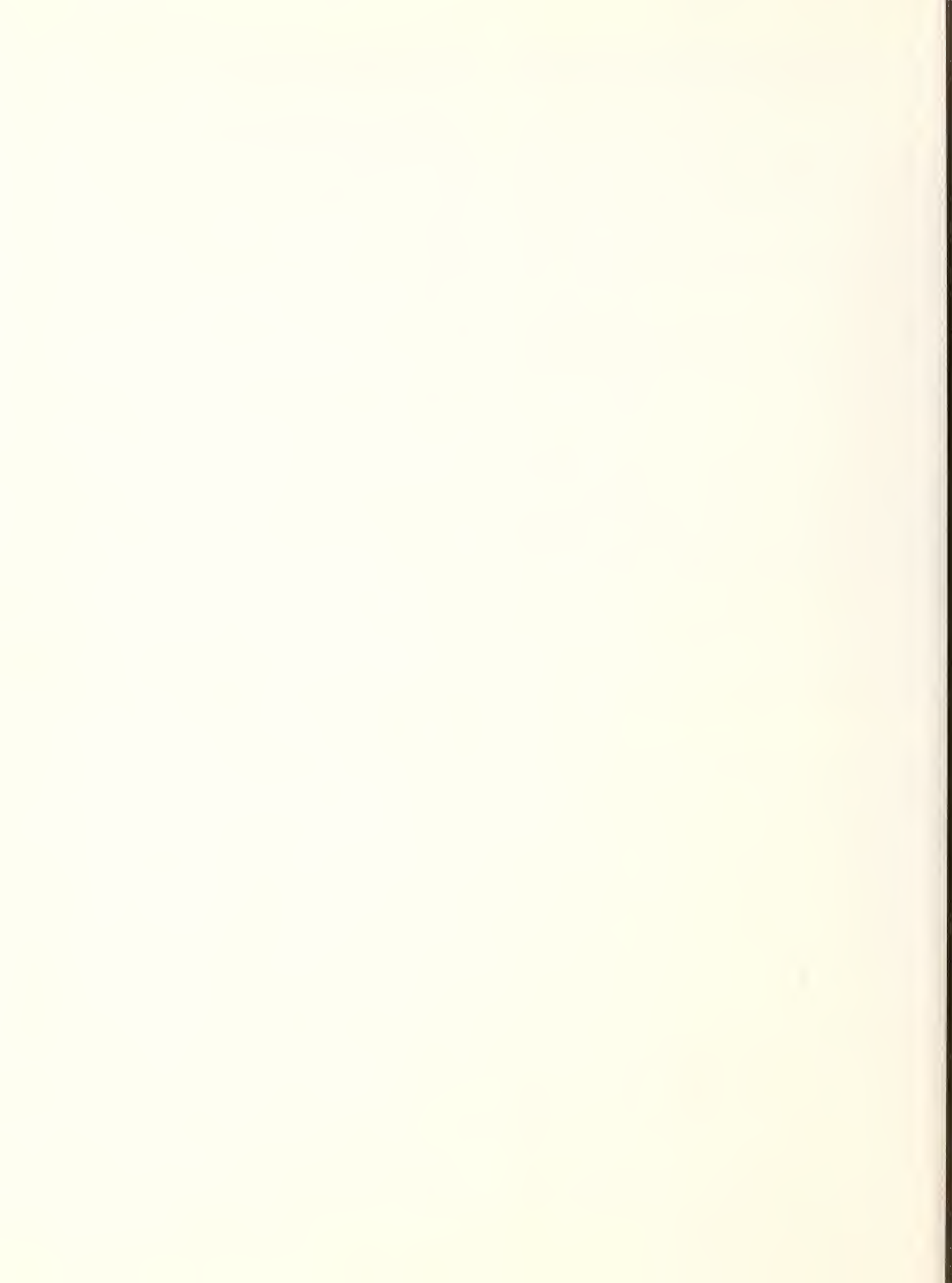
End-of-year inventories—Comprised of (a) finished products; (b) work-in-process; and (c) materials, supplies, fuels, etc. Beginning in 1982, respondents were asked to report their inventories at (the lower of) cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method.

Therefore, 1982 through 1987 data for inventories are not strictly comparable to prior-year data.

Specialization and coverage ratios—An establishment is classified in a particular industry if its shipments of primary products of the industry exceed in value its shipments of the products of any other single industry. An establishments' shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). The following ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in table 1 and data on product shipments shown in table 2.

Specialization ratio—Represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio—Represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments, wherever classified.





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